

The effect of microwave and ultrasonic pretreatment on the degradation of cellulose

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Cellulose-containing wastes are very promising raw materials for bioconversion processes such as bioethanol production. The process of cellulose degradation (saccharification) is carried out in an environmentally friendly way, using enzyme complexes, but in order to increase the efficiency of the process, pretreatment is required to make the cellulose molecule available to the enzymes. In our experiments, we compared two pretreatment methods: microwave and ultrasound energy. The effect of the two pretreatments on the saccharification was investigated with the same energy input values. The individual effect of the treatments was investigated and the amount of reducing sugar recovered was compared with the yields of the enzymatic treatments as well as the values of treatments in alkaline and acidic media. With the same energy input values, microwave energy utilization proved to be much more effective, either alone or in combination with enzymatic treatment, either in acidic or alkaline media.

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Biography

Sándor Beszédes has completed his PhD at the age of 34 years from University of Szeged, Environmental Doctoral School, Szeged, Hungary. He works for Process Engineering Institute of University of Szeged. He has published more than 40 papers in reputed journals and has been serving as an editorial board member of scientific journals.

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